



familial atrial fibrillation

Familial atrial fibrillation is an inherited condition that disrupts the heart's normal rhythm. This condition is characterized by uncoordinated electrical activity in the heart's upper chambers (the atria), which causes the heartbeat to become fast and irregular. If untreated, this abnormal heart rhythm can lead to dizziness, chest pain, a sensation of fluttering or pounding in the chest (palpitations), shortness of breath, or fainting (syncope). Atrial fibrillation also increases the risk of stroke and sudden death. Complications of familial atrial fibrillation can occur at any age, although some people with this heart condition never experience any health problems associated with the disorder.

Frequency

Atrial fibrillation is the most common type of sustained abnormal heart rhythm (arrhythmia), affecting more than 3 million people in the United States. The risk of developing this irregular heart rhythm increases with age. The incidence of the familial form of atrial fibrillation is unknown; however, recent studies suggest that up to 30 percent of all people with atrial fibrillation may have a history of the condition in their family.

Genetic Changes

A small percentage of all cases of familial atrial fibrillation are associated with changes in the *KCNE2*, *KCNJ2*, and *KCNQ1* genes. These genes provide instructions for making proteins that act as channels across the cell membrane. These channels transport positively charged atoms (ions) of potassium into and out of cells. In heart (cardiac) muscle, the ion channels produced from the *KCNE2*, *KCNJ2*, and *KCNQ1* genes play critical roles in maintaining the heart's normal rhythm. Mutations in these genes have been identified in only a few families worldwide. These mutations increase the activity of the channels, which changes the flow of potassium ions between cells. This disruption in ion transport alters the way the heart beats, increasing the risk of syncope, stroke, and sudden death.

Most cases of atrial fibrillation are not caused by mutations in a single gene. This condition is often related to structural abnormalities of the heart or underlying heart disease. Additional risk factors for atrial fibrillation include high blood pressure (hypertension), diabetes mellitus, a previous stroke, or an accumulation of fatty deposits and scar-like tissue in the lining of the arteries (atherosclerosis). Although most cases of atrial fibrillation are not known to run in families, studies suggest that they may arise

partly from genetic risk factors. Researchers are working to determine which genetic changes may influence the risk of atrial fibrillation.

Inheritance Pattern

Familial atrial fibrillation appears to be inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder.

Other Names for This Condition

- Auricular Fibrillation

Diagnosis & Management

These resources address the diagnosis or management of familial atrial fibrillation:

- Genetic Testing Registry: Atrial fibrillation, familial, 1
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1843687/>
- Genetic Testing Registry: Atrial fibrillation, familial, 2
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1837812/>
- Genetic Testing Registry: Atrial fibrillation, familial, 3
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1837014/>
- MedlinePlus Encyclopedia: Arrhythmias
<https://medlineplus.gov/ency/article/001101.htm>
- MedlinePlus Encyclopedia: Atrial fibrillation or flutter
<https://medlineplus.gov/ency/article/000184.htm>

These resources from MedlinePlus offer information about the diagnosis and management of various health conditions:

- Diagnostic Tests
<https://medlineplus.gov/diagnostictests.html>
- Drug Therapy
<https://medlineplus.gov/drugtherapy.html>
- Surgery and Rehabilitation
<https://medlineplus.gov/surgeryandrehabilitation.html>
- Genetic Counseling
<https://medlineplus.gov/geneticcounseling.html>
- Palliative Care
<https://medlineplus.gov/palliativecare.html>

Additional Information & Resources

MedlinePlus

- Encyclopedia: Arrhythmias
<https://medlineplus.gov/ency/article/001101.htm>
- Encyclopedia: Atrial fibrillation or flutter
<https://medlineplus.gov/ency/article/000184.htm>
- Health Topic: Atrial Fibrillation
<https://medlineplus.gov/atrialfibrillation.html>

Genetic and Rare Diseases Information Center

- Familial atrial fibrillation
<https://rarediseases.info.nih.gov/diseases/9740/familial-atrial-fibrillation>

Educational Resources

- Boston Children's Hospital
<http://www.childrenshospital.org/conditions-and-treatments/conditions/arrhythmia>
- Cincinnati Children's Hospital Medical Center
<https://www.cincinnatichildrens.org/patients/child/encyclopedia/diseases/arrhythmia>
- Cleveland Clinic
<http://my.clevelandclinic.org/health/articles/atrial-fibrillation-afib>
- Disease InfoSearch: Atrial Fibrillation Familial
<http://www.diseaseinfosearch.org/Atrial+Fibrillation+Familial/650>
- Heart Rhythm Society
<http://www.hrsonline.org/Patient-Resources/Heart-Diseases-Disorders/Atrial-Fibrillation-AFib>
- KidsHealth from the Nemours Foundation
<http://kidshealth.org/en/teens/arrhythmias.html>
- MalaCards: familial atrial fibrillation
http://www.malacards.org/card/familial_atrial_fibrillation
- Merck Manual Consumer Version
<http://www.merckmanuals.com/home/heart-and-blood-vessel-disorders/abnormal-heart-rhythms/atrial-fibrillation-and-atrial-flutter>
- National Health Service (UK)
<http://www.nhs.uk/Conditions/Atrial-fibrillation/Pages/Introduction.aspx>
- Orphanet: Familial atrial fibrillation
http://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=334

Patient Support and Advocacy Resources

- American Heart Association
http://www.heart.org/HEARTORG/Conditions/Arrhythmia/AboutArrhythmia/What-is-Atrial-Fibrillation-AF_UCM_423748_Article.jsp
- Resource list from the University of Kansas Medical Center
<http://www.kumc.edu/gec/support/conghart.html>

Genetic Testing Registry

- Atrial fibrillation, familial, 1
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1843687/>
- Atrial fibrillation, familial, 2
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1837812/>
- Atrial fibrillation, familial, 3
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1837014/>

ClinicalTrials.gov

- ClinicalTrials.gov
<https://clinicaltrials.gov/ct2/results?cond=%22familial+atrial+fibrillation%22+OR+%22Atrial+Fibrillation%22>

Scientific articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28atrial+fibrillation%5BTIAB%5D%29+AND+%28atrial+fibrillation%5BMAJR%5D%29%29+AND+%28%28familial%5BTIAB%5D%29+OR+%28genetic%5BTIAB%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D>

OMIM

- ATRIAL FIBRILLATION, FAMILIAL, 1
<http://omim.org/entry/608583>
- ATRIAL FIBRILLATION, FAMILIAL, 2
<http://omim.org/entry/608988>
- ATRIAL FIBRILLATION, FAMILIAL, 3
<http://omim.org/entry/607554>

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